



6. (amended) A system for time-shifted viewing of broadcast audio/video programs comprising:

video input means for simultaneously receiving [one or] more than one broadcast video/audio [programs] program from one or more sources; and

B2 cyclic buffer means for storing said programs as program data in a cyclical fashion wherein upon being filled, said cyclic buffer begins replacing the oldest data with the newest of said data and is operable for simultaneous reading and writing of the said data; and

viewing playback means for providing playback control of said data independently from the storing of said programs wherein said playback control comprises random access playback, stop, pause, rewind and fast-forward functions;

whereby said time-shifted viewing is selectively delayed relative to initiation of said broadcast audio/video programs and which may be initiated and controlled simultaneously with said storing of said programs.

### Remarks

Claims 1-16 were objected to with Examiner requesting that the claims commence on a separate sheet as per MPEP 608.01(I). The originally filed claims are thereby attached on a separate sheet.

Claims 1-16 were rejected under 35 U.S.C. 102(b) as being anticipated by Logan et al ('551). Independent claims 1 and 6 have now been amended to more clearly distinguish from Logan et al. Logan et al may hereafter be referred to as "Logan" merely for the sake of brevity but this always a reference to Logan et al ('551.)

Applicants' claimed invention teaches time shifting as a comprehensive method and system. This differs from the recording and time-shifted viewing of a single channel. In order to complete the paradigm of time-shifted television viewing while retaining the methods of operation currently enjoyed by a TV viewer, multiple channels must be recorded simultaneously and these channels must be synchronized and time-shifted precisely, as a group. In other words if the user is viewing 8:00 p.m. programming at 8:10 p.m., multiple channels are recorded and made accessible at the same point in time – at 8:10 p.m., 8:00 programming from all selected channels have already been recorded each in it's own buffer and are available for viewing. To accomplish this, Lang teaches that multiple tuners are used to tune into each individual channel, and multiple streams are be captured in separate circular buffers. This is significant because the multiple buffers are used so that as the user changes channels, the material from each channel has already been recorded and is ready for viewing in a time-shifted mode. A single recorded channel as taught by Logan makes this feature impossible because the buffer would have to be refilled with new channel data, thus forcing the user to wait each time a new channel is selected. Furthermore, the 8:00 p.m. programming for the new channel would have already passed, thus making such a feature impossible without the multi-channel feature



taught by the applicants. As taught in the present disclosure these buffers may reside on a single device or on separate devices, but in either case, Logan does not teach the recording and subsequent timeshifting of multiple channels by using multiple buffers.

Logan fails to teach anything related to the time shifting of and the use of multiple channels. Logan teaches in his system that multiple devices may be used but a significant distinction must be made between multiple devices of Logan and the multiple channels of the present invention. It is clear that Logan teaches multiple devices and not channels. In col. 2 lines 12-13, he refers to "one or more sources." A similar reference can be found at col. 3 lines 58-60. It is well understood in the art that a video source is distinct and complete in and of itself, as opposed to a channel, which is one of many signals modulated into one signal that is supplied by one source. A source may be, without limitation, a TV antenna, a cable converter box, direct broadcast satellite, output from a VCR and so forth. This is also clarified in column 3 line 68 and column 4, line 1. This "baseband signal", which does not include a tuner, is a reference to an IF or composite signal such as those provided as an unmodulated signal to connect your VCR to your TV for viewing. Thus Logan makes it clear that his several sources are unmodulated signals from separate devices. These devices are then demodulated using the RF tuners as shown in Logan's Figure 1, with each RF tuner demodulating a single channel from disparate devices.

In column 4 line 21 one may wonder why Logan refers to an RF tuner selecting "one or more" signals. It is well known in the art that an RF tuner demodulates a TV signal using one oscillator to tune to a single channel, thus providing a single composite signal output. Applicants believe Logan's reference is merely a reminder that multiple devices may be connected. Column 4 details figure 2, in which a single RF Tuner is connected to a single device such as an antenna or cable converter. But as shown in figure 1 and as explained previously, multiple devices may be connected, with some (but not all) of these devices employing an RF tuner to demodulate a single video signal. Thus, column 4 line 21 reiterates that Logan has taught a multiple-input device but not a multiple channel device.

Logan does not supply any teaching on how to timeshift these separate devices. In fact, Logan teaches that of these separate inputs, any one may be switched in by switching node 3 for storage on memory system 5. In Logan's references to channels (plural) he is talking about a single channel from each separate device. Further evidence that Logan did not anticipate the multiple channel aspect of the present invention is found on column 5 lines 52-65. In this section, Logan teaches merely how to select from the multiple channels that are available, but does not suggest that more than one channel is actually timeshifted simultaneously. In fact, in the single reference to using two channels concurrently, Logan refers only to the current state of the art of picture-in-picture, or PIP, which is well understood to be a live feature, not a time-shifted feature. This PIP feature merely allows live television to be monitored while selecting one of the signals from among the mosaic of thumbnail freeze-frames of the recorded material.



In contrast, applicants' claimed invention teaches that multiple channels from the same device may be time-shifted by utilizing separate RF tuners, compression streams and buffers for each channel, in order to completely time-shift the viewing of multiple channels on a single device. Furthermore, Logan does not teach time-shifting as applicants do. Instead, Logan teaches the recording of these devices so that the users may later choose to use the device for replay, fast-forward or pause of a real-time program. In column 3 lines 21-24, Logan makes it clear that a real-time display is provided. Used in conjunction with this real-time display, the user may pause, replay, and so forth, using the recorded information in the circular buffer. In contrast, applicant teaches time-shifting of multiple channels, i.e. viewing multiple channels at a delayed time as if the present viewing time is the previous broadcast time. Numerous examples are cited in applicants' specification which are now reflected in the amended claims

Applicants' claimed invention also teaches the off-loading of the circular buffer by transfer and/or duplication to a separate storage device for archival purposes. This is a significant use of the claimed invention that is not taught by Logan at all. With this feature, a user of applicants' claimed invention may watch a time-shifted program and decide after the fact that they want to save that program for later viewing. To accomplish this, applicants teach that separate storage devices can be employed, said storage devices being distinct from the buffer storage so recording may continue, and also because archival storage can be larger in capacity and of a different medium than that of the buffer.

Applicants claimed invention further teaches the storage of data representing user playback control for viewing data demographic collection, or data interpretation as edit events in the archiving of the program. An entire sequence of viewing that has taken place within the device may be recorded as part of the viewing session, including "time shift skips" during playback such as skipping past a commercial which a viewer may accomplish by fast-forwarding past the commercial. In other words, the commercials in the archived copy of the session would have been tagged and skipped during the session by the viewer. Logan teaches nothing of the sort and in column 5 lines 7-21 merely describes the well-known use of a microcontroller to implement the commands a user generates in real-time from operating a remote control or external computer control. No teaching of storing these events for later use is provided. The Logan description of microcontroller use also fails to teach applicants' feature of receiving broadcast configuration data.

The additional cited art also does not teach the unique features of applicants' claimed invention. Yifrach teaches an instant-replay device, whereby under normal operation the viewer is watching live television. Upon depressing a button, user is switched into viewing from the start of a buffer of a predetermined length, such as 30 seconds, to use the example cited in the Yifrach specification. Upon pressing that button again, the user is switched to ordinary live television viewing.



Goldwasser teaches an invention whose random access embodiment is nearly indistinguishable from Logan, but also teaches a sequential, tape-media based embodiment.

As explained herein none of the cited references, alone or in combination, teach the unique aspects of applicants' claimed invention. In light of this information, along with the requested amendments to the claims, Applicants' believe this patent application is now in condition for allowance, and such favorable action is respectfully requested.

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